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# *Abstract*

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| **Grant Number:** | 1R01DC003947-01 |
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| **PI Title:** | ASSISTANT PROFESSOR |
| **Project Title:** | EMBRYONIC DEVELOPMENT OF TASTE BUDS |

**Abstract:** DESCRIPTION (adapted from applicant's abstract): Traditionally, it has been believed that taste buds develop embryonically as the result of induction by the ingrowing nerve fibers within the oropharyngeal epithelium. However, recent work, including work by the P.I. has challenged and changed this view, demonstrating that taste bud development is independent of innervation. These new findings suggest that the induction of taste buds may occur much earlier, possibly as early as during gastrulation. This new model suggests that: 1) during gastrulation the presumptive oropharyngeal epithelium becomes the only region of the embryo able to give rise to taste buds. 2) within the oropharyngeal epithelium, local cell interactions result in the production of the distributed array of receptor cells. The first hypothesis will be tested by microsurgically and chemically disrupting tissue interactions during gastrulation and assessing the specification of the oropharyngeal epithelium with immunocytochemical and in situ probes. Manipulations that disrupt signaling during gastrulation should result in the loss of taste buds and the expression of oropharyngeal specific genes Pax 1 and 9. The second hypothesis will be tested by disrupting cell contacts in cultured oropharyngeal epithelium. To disrupt, dissaggregation/ reaggregation, or UV microbeam will be used to produce isolated clusters of cells. The distribution of receptor cells will be compared with controls using intrapopulational dispersion analyses. Disrupting cell contacts should result in loss of cell signaling, thereby altering the receptor distribution.

**Thesaurus Terms:**
cell cell interaction, developmental neurobiology, embryogenesis, oral pharyngeal, taste bud

biomarker, cell aggregation, cell differentiation, ectoderm, endoderm, epithelium, gene expression, retinoate, sensory mechanism
immunocytochemistry, in situ hybridization, microsurgery, molecular cloning, polymerase chain reaction, tissue /cell culture

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